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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/633,201

07/29/2003

Sergey Alexandrovich Korenev

ST8462US

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02/08/2005

KUSNER & JAFFE

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EXAMINER

CULBERT, ROBERTS P

ART UNIT

PAPER NUMBER

1763

DATE MAILED: 02/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/633,201

Applicant(s)

KORENEV ET AL.

Examiner

Roberts Culbert

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 January 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 8-11 and 24-32 is/are rejected.
- 7) ☒ Claim(s) 6, 7 and 12-23 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>10/10/03, 10/27/03</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

Claim 10 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 10, the phrase "such as" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 5, 8, 9, 10, 16, 26-29, 31 and 32 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over U.S. Patent 5,066,565 to Martinez et al.

Martinez et al. teaches a method of producing a microporous fluoropolymer sheet comprising irradiating the fluoropolymer with X-rays or electrons followed by chemical etching

Martinez does not explicitly teach that the dosage level of the irradiation step is selected to be below the rupture energy of the carbon-to-fluorine bonds, but sufficient to rupture the carbon-to-carbon bonds. However, since the dosage levels of Martinez et al. overlap the range provided by applicant, and the irradiated material (polytetrafluoroethylene) and type of ions are the same (electrons or X-rays) it may be reasonably assumed that the dosage levels would produce the result as claimed by applicant.

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Further, Martinez teaches that the dosage level may be varied to control the adhesion strength of the fluoropolymer sheet. (Col. 3, Lines 28-30) Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to vary the dosage level of the irradiation step in order to tailor the adhesion strength of the final product as suggested by Martinez.

Regarding Claim 5, Martinez teaches that the source of electrons is an electron beam.

(Col. 4, Lines 18-23)

Regarding Claim 9, Martinez teaches that the etchant is a liquid.

Regarding Claim 10, Martinez teaches using a sodium solution as the etchant. (Col. 3, Lines 16-

18)

Regarding Claims 16 and 28, the fluoropolymer is polytetrafluoroethylene (PTFE). (Col. 4, Lines 24-25)

Regarding Claims 26 and 29, Martinez teaches that the sheet thickness may be for example 0.79 mm. (Col. 4, Lines 24-25)

Regarding Claim 31, Martinez teaches irradiating from a single source. (electron beam)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the

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examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 2, 4, 5, 8, 11, 24, 25, 27 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,565,764 to Hiraoka et al. in view of U.S. Patent 4,956,219 to Legras et al.

Hiraoka et al. teaches a method of irradiating a fluoropolymer with an electron beam to decompose a first polymer chain while leaving a second polymer chain intact. (Col. 6, Lines 20-31)

Although Hiraoka does not explicitly state a first carbon-to-carbon bond and a second carbon-to-fluorine bond, this would inherently be the case for polytetrafluoroethylene since the carbon-to-carbon bond has a lower bond energy than the carbon-to-fluorine bond and would therefore be decomposed first by the electron beam. Hiraoka et al. further teaches exposing the fluoropolymer to an etchant for a period of time sufficient to etch disrupted atoms and molecules (Col. 7, Lines 5-10) wherein micropassages are inherently formed.

Regarding Claim 2 and 8, Hiraoka et al. teaches a dosage level of 10-300 kGy.

Regarding Claim 5, Hiraoka et al. teaches irradiating with an electron beam.

Regarding Claim 11, Hiraoka teaches the etchant may be a gas. (Col. 7, Lines 19-34)

Hiraoka et al. does not teach producing the fluoropolymer in sheet form.

Legras et al. teaches a method of producing a microporous polymer in sheet form comprising irradiating a polymer sheet with accelerated ions to produce damage traces, followed by chemical treatment in a solvent bath for selectively attacking the polymer along the damaged traces.

It would have been obvious to one of ordinary skill in the art at the time of invention to produce the porous perforated fluoropolymer of Hiraoka et al. in sheet form as shown by Legras et al. in order to manufacture a perforated strip under acceptable economic conditions with high quality with regard to uniformity and dimensional regularity to be used as a filtration membrane or the like.

Regarding Claim 4, Legras et al. teaches moving a continuous polymer film past a stationary source of ions.

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Regarding Claim 24, Legras et al. teaches that the sheet has a thickness between a few microns and more than 100 microns. (Col. 9, Lines 61-64)

Regarding Claim 25, Legras et al. teaches that the sheet is conveyed through an etchant following the irradiation step. (Col. 6, Lines 42-45)

Claim 3 is rejected under 35 U.S.C. 103(a) as obvious over U.S. Patent 5,066,565 to Martinez et al.

As applied above, Martinez teaches the method of the invention substantially as claimed, but does not teach a thickness of 1-15mm.

However, since Martinez et al. teaches a sample with dimensions of 0.79mm, it would have been obvious to one skilled in the art at the time the invention was made to use a sample with a thickness of 1mm or greater.

It has been held that where the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device. *In Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984).

Claims 4, 24, 25 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,066,565 to Martinez et al. in view of U.S. Patent 4,956,219 to Legras et al.

As applied above, Martinez et al. teaches the method of the invention substantially as claimed, but does not teach producing the fluoropolymer in a continuous fashion.

Legras et al. teaches a method of producing a microporous polymer in sheet form comprising irradiating a polymer sheet with accelerated ions to produce damage traces, followed by chemical treatment in a solvent bath for selectively attacking the polymer along the damaged traces.

It would have been obvious to one of ordinary skill in the art at the time of invention to produce the porous perforated fluoropolymer of Martinez et al. in sheet form as shown by Legras et al. in order to

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manufacture a perforated strip under acceptable economic conditions with high quality with regard to uniformity and dimensional regularity to be used as a filtration membrane or the like.

Regarding Claim 4, Legras et al. teaches moving a continuous polymer film past a stationary source of ions.

Regarding Claims 24 and 30, Legras et al. teaches that the sheet has a thickness between a few microns and more than 100 microns. (Col. 9, Lines 61-64)

Regarding Claim 25, Legras et al. teaches that the sheet is conveyed through an etchant following the irradiation step. (Col. 6, Lines 42-45)

Allowable Subject Matter

Claims 6, 7 and 12-23 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Roberts Culbert whose telephone number is (571) 272-1433. The examiner can normally be reached on Monday-Friday (7:30-4:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills can be reached on (571) 272-1439. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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